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## Questions of fairness and anti-doping in US cycling: The contrasting experiences of professionals and amateurs

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### Abstract

The focus of researchers, media and policy on doping in cycling is often limited to the professional level of the sport. However, anti-doping test results since 2001 demonstrate that banned substances are also used by US cyclists at lower levels of the sport, necessitating a broader view of the patterns and motivations of substance use within the sport. In this article, we describe and explain the doping culture that has emerged in domestic US cycling among amateur and semi-professionals. Through analysis of records from sports governing bodies and journalistic reports, we assess the range of violation types and discuss the detection and punishing of riders who were not proven to have intended to cheat but became “collateral damage” in the war on doping. We argue that the phenomenon of doping is more complex than what has been shown to occur in elite sport, as it includes a wider variety of behaviours, situations and motivations. We develop fresh insights by examining cases where doping has been accidental, intrinsically motivated, non-performance enhancing or the result of prescribed medical treatments banned by anti-doping authorities. Such trends call into question the fairness of anti-doping measures, and we discuss the possibility of developing localised solutions to testing and sanctioning amateur athletes.

### Keywords

Drug abuse, public health, policy

### History

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### Introduction

The focus of policy, media and many academic discourses on drugs in sport has been upon cheating and negative health outcomes (Gleaves, 2010; Simon, 2004). These are the two main underlying reasons for the funding and implementation of anti-doping testing, and the subsequent legal and quasi-legal process aimed at punishing the cheats. The development of organised international anti-doping policy has been based on these central tenets since the 1960s (Beamish & Ritchie, 2004; Dimeo, 2007; Hunt, Dimeo, & Jedlicka, 2012). More recently, the World Anti-Doping Agency (WADA) included a third guideline known as the “spirit of sport”. For a substance or technique to be banned, it would have to contravene two of these three: fair play, health of the athlete and the spirit of sport (WADA, 2009).

Previous research on doping in cycling has focused on the professional level (Mignon, 2003; Ohl, Fincoeur, Lentillon-Kaestner, Defrance, & Brissonneau, 2013; Sefiha, 2012; Waddington, 2000), while largely neglecting the lower amateur levels of sport and masters competitors in higher age categories. In this study, we focus on the cases of all

American cyclists, amateur and professional, who were caught doping and sanctioned during the period 2001 and summer 2014. The range of cases includes athletes whose intentions to cheat others are not obvious, as athletes may have used recreational drugs like cannabis, used medicines that contained banned drugs without realising it, or bought and used nutritional supplements contaminated with banned substances. Taking a broader view of US cycling that includes amateurs exposes patterns of doping behaviour beyond the narrow perspective of a small number of professionals whose motivations clearly lies with a desire for financial gain and celebrity status (Backhouse, McKenna, Robinson, & Atkin, 2007; Laure & Reinsberger, 1995). Lentillon-Kaestner and Carstairs (2010) noted doping may occur at any level of competition, asking “What happens before cyclists become professional?” (p. 336). To this we add an exploration of what happens when cyclists are unlikely to ever become professional or when cyclists compete as older adults. In addition to elite cases, we describe and explain the doping culture that emerged in domestic US cycling among amateurs, those who compete at the lower categories of cycling, and semi-professionals, those who may win large races and prize purses but who do not have contracts with the largest professional teams.

The critical approach adopted here aims to analyse and discuss the nature of policy in practice. We demonstrate the variety of doping situations and critically assess the outcomes of anti-doping against WADA’s stated purpose and the general ideology underpinning anti-doping. The patterns that emerged starkly contrasted with the policy and media-led demonisation

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of doping athletes and with common assumptions of extrinsically motivated cheating. These cases point to possible trends in doping and raise new questions about the fairness of current anti-doping policies.

## Background

The United States Anti-Doping Agency (USADA) was formed in 2000 as the trend globally was to move away from anti-doping being embedded within organisations with a vested interest in maintaining the integrity of their image, towards independent organisations that would be judged by their ability to protect “clean sport” (Hunt et al., 2012; Kamber, 2011). Thus, in parallel to the leadership shifting from the International Olympic Commission (IOC) to WADA, the American re-organisation took responsibility away from the US Olympic Commission and established USADA. Similarly, the situation within professional cycling had dramatically altered after the 1998 Festina scandal, an event that brought forward proposals for an independent global body. WADA increased the pressure on the Union Cycliste Internationale (UCI), not least because cycling at the top level had a reputation for allowing doping to occur and not punishing cyclists who did get caught with sufficient bans to act as a deterrent (Hoberman, 2003; Møller, 2006; Waddington, 2000).

There had been some precedence of doping behaviours in US cycling, such as the use of blood doping among the Olympic team for the 1984 Los Angeles Games (Gleaves, Llewellyn, & Lehrbach, 2014). Establishing the nature of the doping culture within US cycling in the 1990s is challenging. Even in the extensive evidence presented against Lance Armstrong the point of origin for his doping decision is not entirely clear, but some evidence would suggest it was in 1995 with Motorola (Hamilton & Coyle, 2012). However, Matt DiCanio and Tyler Hamilton both explained that their encounters with doping occurred only once they were established within the professional European scene. For Hamilton, this was the late 1990s. It was in 1997 he made the decision to dope, and he argues that for most professionals of that time period, the realisation that doping was a necessity would come in their second year and their own decision would have to be made in their third year (Hamilton & Coyle, 2012, p. 66). We would propose, therefore, that the extent of doping within the domestic context was relatively low in the late 1990s on the basis that American professionals learned from European doctors, and as we detail below, evidence of a doping culture really emerges around the time that Lance Armstrong was winning his seven consecutive Tour de France titles.

It should be noted here that it is almost impossible to say with any certainty what the patterns of drug use were. Evidence from testing and the eventual confessions of a small number of professional dopers can offer some indications. However, these are only partial insights. Even when higher numbers of cyclists were caught, it may have been the result of the development or refinement of tests for specific drugs, rather than any specific pattern.

Many recent scholarly approaches to the study of doping in sport aim to support anti-doping through improving understanding of the contexts of athletes' lives and training, psychological make-up and the processes through which they

are educated (Backhouse & McKenna, 2012; Morente-Sánchez & Zabala, 2013; Ntoumanis, Ng, Barkoukis, & Backhouse, 2014). There have recently been a significant number of approaches to modelling the “doping decision”, and statistically testing the relevant variables (Bilard, Ninot, & Hauw, 2011; Ntoumanis, Ng, Barkoukis, & Backhouse, 2013; Sas-Nowosielski & Swiatkowska, 2008; Tsorbatzoudis, Rodafinos, Spiliopoulou, Barkoukis, & Lazuras, 2009). Some of these studies have been funded by WADA with the explicit remit to help the fight against drug misuse in sports.

While these studies can be credited for improving the evidence base, there appears to be several unchallenged assumptions: that the decision to “dope” firstly is a rational, intentional and conscious decision to cheat (Hoff, 2012; Overbye, Knudsen, & Pfister, 2013) that emerges from inherent psychological traits (Bilard et al., 2011; Petróczy & Aidman, 2009) combined with environmental pressures (Smith et al., 2010), secondly is perceived as deviant by athletes and their entourage (Christiansen, 2005; Pitsch, Emrich, & Klein, 2007), and lastly that anti-doping is a legitimate and fair policy that functions to catch dopers and deter potential dopers (Martin, Baron, & Gold, 2006; Mazanov, Huybers, & Connor, 2011). However, it could be more critically argued among this wealth of recent empirical knowledge there has not yet been a study that shows the variety of doping situations and describes patterns of doping behaviour according to this variety, despite the availability of information on every sanctioned athlete (Yonamine, Garcia, & de Moraes Moreau, 2004). Dopers are not homogenous and there is a significant conceptual and real difference between someone who systematically dopes over a period of time, and many innocuous doping situations (see Ramachandra et al., 2012; Strelan & Boeckmann, 2006). The social groupings affected by anti-doping are much more diverse than previous studies have considered where the focus has been on the extrinsically motivated elite and aspiring elite, male athletes and their use or potential use of PEDs (Bloodworth & McNamee, 2010; Christiansen, 2010; Outram & Stewart, 2015). This narrow focus has left gaps in the existing research, overlooking patterns of behaviours, motivations and situations occurring outside the upper reaches of the sport.

Beyond the level of the individual and their immediate circumstances, some recent historical, sociological and policy analyses of anti-doping have driven towards a more critical deconstruction of ideological principles, common sense claims, self-governance of international agencies and the equity of policy decisions (Denham, 2011; Hanstad & Waddington, 2009; Kayser & Broers, 2012; Stewart & Smith, 2008; Straubel, 2008; Wiesing, 2011). Møller (2014) has used the term “corrupt idealism” to frame his criticism of anti-doping leaders who are willing to accept or indeed promote unethical behaviour in order to support the “greater good” of anti-doping. There are cases of athletes who likely did not intend to violate anti-doping regulations, such as those who unintentionally ingested a banned substance (Cox, 2014; Pluim, 2008). There may be others who failed to acquire a therapeutic use exemption (TUE) but were following orders from their personal physician, risking a positive test and a sanction (Fitch, 2013; Overbye & Wagner, 2013). However, under WADA's strict liability principle all athletes are held to

account for the presence of any detected banned substance, regardless of their intent (Cox, 2014). There are numerous examples from a range of sports where athletes have been punished for inadvertently breaking the rules. Thus, it may be that the “war” on drugs in sport has been so heavily skewed towards the claimed outcomes of catching cheats that relatively innocent athletes who did not intend to enhance performance (Pluim, 2008) are swept up, in a sense becoming “collateral damage” (Cox, 2014).

The critical approach adopted here therefore aims to analyse and discuss the nature of policy in practice. We use a case study to demonstrate the variety of doping situations and critically assess the outcomes of anti-doping against WADA’s stated purpose and the general ideology underpinning anti-doping. The social groupings affected by anti-doping are much more diverse than previous studies have considered where the focus has been on elite, male athletes.

### Evidence and methods

Data were collected in several ways. First, we utilised the on-line records of the national governing body, USA Cycling, and the USADA, the organisation that caught the US Postal riders. We recorded details of all 88 sub-cases that resulted in a sanction. In our collection, we included the type of test (in or out of competition), where the test was administered, the type and name of the substance the athlete tested positive for, and the length of the competition ban imposed. Second, we used information available through USA Cycling’s website regarding cyclists’ race results and competitive history, categories for racing and cycling discipline (i.e. track, road). Though we do not present this data here, it was the basis for identifying the range of case types we identify below. In some instances, the athlete challenged the outcome through the arbitration process. Where this is so, the full details and decision are available through the USADA website and were included in the analysis.

Third, we also recorded details from news reports of cases that attracted mainstream media attention. Rather than ignore those sub-cases often left out of mass media coverage for lacking a newsworthy aspect, we sought to include these hidden in plain sight accounts in our analysis. To this end, we gathered information from online news sources, some of which were connected to print media and some that are exclusively web based. In most cases, these reports were found in American cycling magazines such as *VeloPress* and on websites reporting cycling news. We used Google to search for each cyclists’ name. In the cases where the name search returned multiple or unrelated results, we entered a second search for the cyclists name with the word “doping”. In each case this returned at least one relevant result other than the relevant USADA press release. Some cyclists had Wikipedia pages, though information from these pages was used only where the information source was cited and the source could be confirmed. In cases outside of the widely covered elite doping scandals there were generally few news pieces available for each case. However, we agree with Laurendeau and Moroz (2012) that “we might infer from the relatively small number of articles that the ideas that they produce and reproduce are so ‘commonsense’ as to generate little

controversy and, hence, little (public) discussion” (p. 387) yet are useful for analysis. Many of these lesser-known cases contained details about cyclists’ motivations and circumstances that contradict those most commonly discussed in the literature on doping. As such, our findings provide correction to the myopic view of doping within US cycling.

The news reports on each sub-case were collected and analysed for details of any response to the test result by the athlete, such as an admission or denial of intent, or for any alternative explanation for the positive result. Often, the news reports functioned to provide background and context for several cases involving lesser or unknown amateur and master cyclists. There are factual elements of each sub-case such as the length of a sanction, drug type, location where the test was conducted, age of the cyclist, etc., as well as descriptive and/or subjective elements, including statements by cyclists to sports journalists. We have analysed and presented the former type of data, then used the latter type to contextualise and highlight aspects of the patterns that emerged from the official records. We approached these more descriptive data with a sense of critical detachment, though inevitably used our judgment to select key quotes and interpretations to build an overarching argument.

There are, of course, limitations to this form of data collection, not least the reliance on reporters and others to produce reliable accounts. Especially with regard to the issue of drugs in sport, sportspersons create particular forms of self-presentation. Dopers who have not been caught claim to be clean, those under suspicion divert blame elsewhere to distract attention, those who are caught usually only admit to the specific offence that has been proven, and even “full confessions” cannot be trusted (Lamont-Mills & Christensen, 2008). Similarly, journalists and academic researchers who do access relevant sources are trying to create a version of events that fits dominant ideological and policy paradigms and expectations of readers (Denham, 2011; Vetteenemi, 2010). Therefore, rather than accepting any one account as the singular truth of a case we cross-referenced journalistic reports with all available information from USA Cycling, USADA, and the CAS and took note of any inconsistencies or contradictions in the journalistic accounts. Additionally, we included only professional journalist accounts, and excluded blogs, forums, and other user-generated material, as well as opinion pieces pertaining to the sub-cases from the analysis.

### Testing and doping culture: not just an elite problem

USADA’s first tranche of tests in 2000 produced only three adverse analytical findings – all of these for ephedrine – and the length of bans were zero, one and three months. However, it would not be long before tests began to catch more “serious” cheats. Through the years from 2002 to 2014, there was a gradual increase in the number of cyclists who were caught trying to enhance their performance using testosterone, steroids, erythropoietin (EPO), growth hormone and blood doping. These cyclists may have been caught through blood or urine testing, but they may also have received sanctions resulting from a violation such as refusal to submit to a test or through their own admission. The total number of sanctions in a single year peaked at 15 in 2012, the result of



a long-term USADA investigation into the US Postal team. As the US Postal team became more successful the doping prevalent in European cycling “seeped” into the American context, laying the foundation for a culture of doping to emerge (Brewer, 2002; Lentillon-Kaestner & Carstairs, 2010; Lentillon-Kaestner, Hagger, & Hardcastle, 2012; USADA, 2012). It seems clear that elite American cycling had, in a broad sense, accepted the necessity of doping in order to compete in major races against European teams. This acceptance is evidenced by the extensive doping system detailed in USADA’s Reasoned Decision against Lance Armstrong (USADA, 2012). Lance Armstrong had won several of the world’s top races, including the Tour de France (1999–2005). USADA have shown that he was using performance-enhancing drugs for all of those victories, and this is supported by the testimony of many other top American cyclists who also doped for part or all of this time (USADA, 2012).

Yet, the testing system was not functioning sufficiently well to catch the dopers. Of the 88 total sanctions from 2000 to 2014, in all types of cycling, the majority of positive tests was for anabolic agents (42%). Other forms of deliberate cheating were using peptide hormones such as EPO (26%) and blood doping (5%). The more ambivalent categories are stimulants (22%) that may or may not have been for enhancing performance, and missing/refusing tests (11%). A number were sanctioned for “non-analytical” reasons, including the members of US Postal who were subpoenaed by the federal investigators so had to confess. Kayle Leogrande’s case is more subtle: he told his team’s *soigneur* he was worried about being caught and she reported him to USADA, suggesting that even the small number of known doping cases were not always the result of good anti-doping control mechanisms.

The endurance-boosting drug EPO had been popularised through the 1990s, due to the perceived performance benefit and lack of a test to detect usage (Lundby, Achman-Andersen, Thomsen, Norgaard, & Robach, 2008, for development and critique of test). Once such a test was developed in 2004, we could see that domestic cyclists were familiar with the drug: the first positive tests being Adham Sbeih (2004), Adam Bergman (2005), Alvaro Tardaguila (2006) and Neal Schubel (2006). These four cases also serve to demonstrate the breadth of contexts. Sbeih was a national level competitor (USA Cycling, 2004), Bergman was a member of the elite domestic team Jelly Belly (Knapp, 2004), Tardaguila was an amateur rider (USA Cycling, 2006) and Schubel was a low achiever at masters level (Stokes, 2010). The Canadian woman who raced to a successful level in the USA, Geneviève Jeanson, came to admit using EPO for a period of 8 years, beginning when she was 16 years old, from 1997 to 2005 (CBS Sports, 2007). Since there was not a reliable test for EPO use until 2004, it is quite possible that other cyclists were using it before this time, and the lack of systematic testing makes it likely that these cases were the unfortunate ones who were caught rather than the only guilty parties. Moreover, the total number of tests conducted relative to the increased number of competitive cyclists combined with evidence from those who used EPO and other drugs without being caught, suggest the prevalence was significantly higher than the handful of positive cases.

The emergence of doping behaviours – the taking or using of prohibited substances or methods of performance enhancement – depends upon suppliers, and in turn entrepreneurial business-like suppliers were responding to demand (Martin et al., 2006; Stewart & Smith, 2008). When Joe Papp first became part of this history, he was a 32-year-old moderately successful rider who tested positive for 6a-OH-androstenedione and was banned for 2 years. He was then given a lifetime ban in 2011 for distributing banned drugs (Ford, 2011). Papp also sold banned drugs using a website. Investigators discovered that Papp had a “client list” of 187 individuals, though not all of these were cyclists. The consequences of further investigations into Papp’s customers led to a number of confessions and sanctions, and also provided some indication of wider doping among amateur and semi-professional teams. In 2007, for example, Chuck Coyle was given a two-year ban when USADA found a record of purchases for EPO and insulin growth factor made on his credit card from Papp’s website. However, Coyle responded by claiming that some of his younger teammates had borrowed his credit card and laptop computer, which was a common practice in general, to buy the drugs (Rogers, 2010).

Other cases seem to indicate a developing pattern of PED use among aspiring, non-elite cyclists. In 2001, semi-professional rider Duane Dickey tested positive for three banned drugs: phentermine, boldenone and nandrolone (USA Cycling, 2010). Dickey was later caught in possession of EPO and banned for life. In 2002, a former member of US Postal, Kirk O’Bee, tested positive for elevated testosterone (Rogers, 2012). Female track cyclist, Tammy Thomas was given a lifetime ban for a second offence after testing positive for norbolethone in 2002 (Macur, 2004). These and other similar cases demonstrate that drug use was indeed going on within the ranks of non-professional cycling. These cases are not directly linked to the 2012 US Postal case but are a domestic sub-set of the doping culture that was disseminated from the elite context through the lower levels of the sport.

Kayle Leogrande’s experience around the same time period helps to illustrate how strongly a doping culture had taken hold in American cycling, including among those cyclists who were not quite at the uppermost echelons of the sport. During the period 2004–2006, “other professionals” told him about doping (Lovett, 2012). He bought EPO from Joe Papp in 2006, and had to self-experiment with dosages. He joined the Rock Racing team in 2007 “where he was introduced to former teammates of Lance Armstrong’s [and] began to dope more regularly” (Ibid.). There is no direct connection between Leogrande and US Postal, except that his eventual admission assisted the federal investigation led by Jeff Novitzky. Later, Travis Tygart, Chief Executive of USADA, would say that Leogrande’s evidence played a significant role in piecing together the evidence against US Postal, perhaps because Leogrande speculated that doping would be necessary to compete successfully in the top European races (Ibid.). Moreover, the former professional Floyd Landis gave evidence that the owner of the domestic team, Rock Racing, “was involved in doping” (Ibid.).

Thus, we can see the emergence of doping as well as the failings of anti-doping to stop this culture from developing. Within a few years of the first EPO cases, doping had spread

to amateur and masters levels such that organisers of mass participation events felt the requirement to fund and organise testing. In the New York Gran Fondo in 2012, two masters-level riders tested positive for EPO (Dreier, 2012). Yet, the authorities focused upon the top-level riders, in particular Lance Armstrong, and have not created an adequate system that would include regular, random in- and out-of-competition testing for the recreational and master levels of cycling. The critical outcomes of this policy strategy have been that “clean” riders are disadvantaged and most seriously competitive riders would feel under pressure to take part in doping. The concept of a “level playing field” is incongruous here, not least because a wide range of factors influence performance and that doping is an unknown contributing factor to race results. Anti-doping policy did not serve to protect the fairness of sport or indeed the spirit of sport.

As evidenced by the official doping cases, a sub-culture developed where amateur and semi-professional cyclists came to mimic the behaviours of their professional counterparts and indulged in doping. While it is hard to be certain about this, it may have been the case that a serious amateur competitor felt the need to participate in doping for reasons of identity, status and belonging within a social environment that respected and emulated those in the higher echelons of the sport.

### **Collateral damage: recreational and unintentional use of banned substances**

While such cases pointed to a sub-culture of deliberate, conscious cheating using the most “serious” of drugs, other cases showed the dilemmatic nature of policy: that not all “dopers” are created equally. Anti-doping efforts aimed at detecting those who seek to cheat may result in bans for athletes who never intended such. For example, the three ephedrine cases in 2000 were given shorter bans, suggesting that the authorities did not deem them to be worthy of a full sanction due to the relatively innocuous nature of the substance and the likelihood that it was not intentionally consumed. These are indicative of a wider pattern wherein the intention to cheat is unsubstantiated yet competition bans still apply. The Chuck Coyle episode highlights this, and he was informed that the cost of appealing the decision was around \$20,000, so he had no choice but to accept it. Thus, the legal process disadvantages amateur cyclists or lower paid semi-professionals. Møller (2014) has recently argued that the creation of a doping-specific legal process is problematic, and does not give those charged with an offence the same legal protection or opportunities to defend their case in comparison to normal civic prosecutions. The use of the strict liability principle is designed to counter any athletes’ appeals and puts the onus fully of them to explain any substance found in their sample. American cases such as Coyle and Armstrong show how agencies can successfully pursue a charge on the basis of non-scientific evidence, such as Coyle’s credit card purchases. It is questionable whether a similar case would be upheld under civic law when the defence has more scope to challenge the nature of the prosecution’s evidence. Nonetheless, we can say that Coyle’s unfortunate position of being unable to mount an appeal shows how discriminatory the legal process can be.

However, as in the 2003 cases of mountain bikers Kathi Krause and Gary Houseman, the use of narcotics and cannabis during competition is explicitly banned by the anti-doping agencies. Both were caught using cannabis and both were banned for a year. Houseman was also stripped of his first place title in the UCI World Cup event (Albert, 2003). Krause was aged 41 and had only finished 15th in the national championships (USADA, 2003). It is a different conceptual argument to propose that the use of drugs that are likely to inhibit rather than enhance performance is not a form of cheating or allow one competitor an advantage over another (Henne, Koh, & McDermott, 2013). The social and moral value of this regulation has been debated among sports philosophers and sociologists, but WADA insists that recreational drugs contravene the principle of the “spirit of sport” despite the problematic nature of that idea. Bans for non-performance enhancing drugs do seem particularly harsh in the context of US cycling when an unknown quantity of riders doped to enhance performance without being caught, and when the majority of the US Postal team was given reduced bans of six months because they provided additional information to assist the investigations. That is an unlikely option for cyclists unable to offer such information, which is likely to be the case for many at the amateur level.

In total, there have been 11 cases of recreational drug use. However, these can be critically assessed on a number of factors. As mentioned above, they are generally accepted to be non-performance enhancing and the regulations an unnecessary intrusion into athletes’ private lives (Kayser, Mauron, & Miah, 2007). Perhaps more importantly, the science behind banning these drugs shows that cannabinoids can be present in urine long after it has been consumed (varying depending upon consumption habits and amount used). WADA changed the threshold from 150 to 15 ng in 2013 because it was recognised that this was a significant issue (WADA, 2013). The rules state that consumption out-of-competition is allowable but not in-competition. Under the pre-2013 rules, the presence of metabolites in urine during an event period might indicate usage occurring up to three weeks prior to the test (Huestis, Mazzoni, & Rabin, 2011). Thus, not only is the wider social context of banning recreational drug problematic, but also within WADA’s very own rules. Even the organisation’s first President Richard Pound said that an athlete who used marijuana a month before competition was likely to be detected, as was someone exposed to second-hand marijuana smoke two weeks before an event (Miceli, 2013). As such, there clearly are inconsistencies and inequalities where innocent parties can end up sanctioned.

There have also been several cases where the substance ingested appears to have come from a source unwittingly consumed by the athlete. A case in point here is that of 23-year-old Amber Neben who was found to have 19-norandrosterone in her sample in 2003. She had the resources to take her appeal to the North American Court of Arbitration for Sport (NACAS), and identified the source of the banned substance to be from a contaminated supplement. The panel agreed her positive test to be unintentional but still ruled that she be sanctioned with a 6-month ban. Indeed, the transcription of Neben’s arbitration decision shows the dilemmas faced when confronted with an inadvertent case of doping

(NACAS, 2003). The experts agreed that supplements were normal, such as electrolyte drinks and glucose gels. They even suggested not using supplements contravened the “stated purpose of the fight against doping, ‘to protect the health of athletes’” (NACAS, 2003, p. 6) since these were needed to maintain health, avoid fatigue and mental lapses during races. Ironically, they cite the example of Lance Armstrong to show that road racing is “gruelling and all too often dangerous ... the demands placed on the body ... are greater than most world-class athletes in other sports”. (NACAS, 2003, p. 6). The source of Neben’s banned substance was not fully explicated but it was proposed that it possibly came from a supplement bought from Hammer Nutrition by USA Cycling coaches and distributed to the team. What Neben’s appeal showed was potential negligence on the part of those who had responsibility to protect her from the risk of a positive test, and that all athletes are at risk of inadvertently taking contaminated supplements, which independent analyses have shown can contain banned substances (Cohen, 2009; Cohen, Travis, & Venhuis, 2013). Though USA Cycling was in the spotlight for this mistake and stood accused of not providing any “real education” to athletes about the “dangers of supplement contamination” (NACAS, 2003, p. 10), it remains the athlete who bears the brunt of the legal process including potentially career and reputation damaging sanctions (Amos, 2007).

Taken together, these examples suggest that anti-doping regulations can have consequences for individuals whose offence is relatively innocuous, perhaps even completely unintentional, or even the result of negligence by their coaches or national governing bodies. Yet there seems to be an acceptance among anti-doping policy decision-makers that there will be a degree of “collateral damage” in the pursuit of the real cheats. It seems ironic that Lance Armstrong negotiated his way around the anti-doping system for a period of 8–10 years, that his guilty team-mates received a light sanction and were allowed to return to the sport, yet others have faced consequences for behaviours that are completely different to the classic sense of doping as intentional cheating.

### **Masters: relevance, therapeutic use, and anti-ageing**

We have already mentioned several of the cases where older cyclists used doping drugs. Perhaps it is not surprising when highly competitive riders wish to retain some level of their youthful competitive success. This appears to be the explanation for such cases as that of Kenneth Williams who was aged 42 when he tested positive for DHEA (Weislo, 2009). He was a well-known and popular racer who wished to maintain his performance levels. Forty-nine-year-old Todd Robertson tested positive in 2011 in an out of competition test for oxygen-enhancing peptide hormone (EPO), and admitted using it for 2 years previously. For this he received a two-year competition ban. In 2014, he was found to have the stimulant modafinil in his sample and thus was banned for 8 years at age 51 for this second offence (USA Cycling, 2014). The second offence appears to have been accidental, since he learned from his first to be vigilant, he said: “I still do not know how or why a banned stimulant was found in my system”

(USA Cycling, 2014). Interestingly, Robertson also admitted using supplements, which shows how even those over 50 years old seek performance-enhancing substances, whether legal or otherwise, to maintain their levels of competitiveness across their life-cycle.

The New York Gran Fondo 2012 cases of David Anthony (aged 45) and Gabriele Guarini (aged 49) brought this issue some national attention when they were reported in the *New York Times* (Dreier, 2012). However, Anthony’s case presents a different scenario from life long competitors looking to maintain competitiveness. He was a relative latecomer to cycling but became – by his own admission – obsessed with improving his ability and performances. He had won the New York Gran Fondo for his age group, so had a degree of success, but was never going to become a professional or reap extrinsic rewards. However, he spoke of seeking “relevance” within his local cycling community (Ibid.). This raises questions about identity among non-elite and older sports men and women. Rather than the rewards being related to prize-money, high salaries or sponsorship deals, their desire is for localised recognition and to belong to a specific sub-culture. Thus, the increasing popularity of cycling in the USA, and the widening of race participation opportunities, has helped to create “tribes” of serious recreational riders who buy expensive equipment, learn about the science of training and preparation, and perhaps have a personal coach. Within this culture doping is transmitted from older or more experienced cyclists to less experienced riders (Lentillon-Kaestner & Carstairs, 2010), normalising doping as a rational part of higher level competition (Sefiha, 2012). Anthony, and no doubt others, took the next step towards the pseudo-professionalisation of their hobby by using doping drugs (Brewer, 2002). Though doping may have “seeped” into domestic semi-professional teams through connections and influences from elite riders, a further effect was to prompt amateurs to dope.

The theme of older riders has another important dimension related to the notion of collateral damage: the overlap of anti-doping regulations and anti-ageing therapeutic drugs. An example here is that of 62-year-old David LeDuc who was caught and banned for 2 years in 2013 for using EPO, testosterone and amphetamines. He did not manage to explain the EPO, but the other drugs were prescribed by a doctor for age-related compensation and for attention deficit disorder. Similarly, Sloan Teeple, aged 42, was banned for 2 years for using testosterone prescribed by a doctor for therapeutic reasons, but he had not received a TUE.

Other evidence points to the challenges associated with the overlap between anti-ageing therapies and older cyclists. A more publicly discussed case (but not one that led to a sanction) was that of Jeff Hammond (Beaudin, 2013) who was a low-level amateur category 4 cyclist, aged 58. In order to treat hypogonadism and low bone density he uses supplemental testosterone prescribed by a doctor. When he contacted USADA to request a TUE he was denied, in effect being told to either stop racing or stop medicating. A letter from USADA informed him that his TUE was denied because his use was to treat a functional disorder without demonstrating the specific root cause of his hypogonadism: “Justification for the use of testosterone must meet the



standard of demonstrating an organic cause of androgen deficiency/male hypogonadism. A diagnosis based simply on a functional disorder does not meet this standard ... rather functional diagnoses often focus solely on low testosterone and generalized symptoms” (cited in Beaudin, 2013). Though Hammond’s testosterone therapy has successfully restored his energy levels to where he feels normal, the lack of a TUE prevents him from racing. Hammond’s analysis cut to the core of the anti-doping policy challenge here: “They’re treating us like 20-year old Olympians. Something that’s considered a performance-enhancing drug for an 18-year-old may be a necessary life-saving medication for a senior athlete. I think it’s very unfair” (cited in Beaudin, 2013). It was reported at this time that USADA had (in 2012) received 409 requests for TUEs, of which 52 were for anabolic agents such as testosterone. The science director for USADA, Matthew Fedoruk said: “we’re seeing more athletes that are at masters level realising that they were perhaps taking a prohibited substance” (cited in Beaudin, 2013).

There is a certain irony to the risk of running afoul of a policy designed to protect health by using a substance that a doctor agrees is for health protection. Joe Papp claimed that many of his clients were in this older age group. Another source of information on this subject is Andrew Tilin’s (2011) self-experiment that formed the basis of his 2011 book *The Doper Next Door: My Strange and Scandalous Year on Performance Enhancing Drugs*. Tilin had interviewed Papp for VeloNews and subsequently sought other sources of doping products. As a male over 40 he found many clinics willing to support his “hormone therapy” treatment even when he admitted to the advisors that he intended to use these to improve his cycling. He showed that the anti-ageing industry had grown to significant proportions – valued in the billions of dollars annually, its leading proponents had become millionaires. It seems that the confluence of cycling’s popularity with anti-ageing opportunities, and the pressures to promote “clean sport”, has created a “perfect storm” of older riders who wish to maintain youthful vigour finding themselves punished and marginalised (Hoberman, 2005; Lopez, 2011).

Of course, many other cyclists may take the view that they are unlikely to be podium finishers in events that have testing procedures so therefore may simply continue with their medical prescription regimes. To avoid such cases becoming further examples of collateral damage of anti-doping efforts, addressing “doping” requires a different approach to those presented in studies of high level professional sports. The motivation to take a banned substance may be purely medical, or part of strategy to reduce the effects of the ageing process. There is not the motivation to win money or fame. The deterrents may also be fewer as there is little risk of getting caught, and a two-year sanction for a cyclist over the age of 40 may not seem like a particularly onerous punishment, especially for those for whom cycling is merely a hobby. Rather than the extrinsic motivations often provided as the main rationale for doping, the cases of amateur cyclists demonstrate that the reasons for using banned substances are varied and may be unrelated to any perceived sports reward. Nonetheless, if doping behaviours are on the increase among a wider population with variable access to medical expertise,

then a potentially significant public health issue may be emerging (Sjöqvist, Garle, & Rane, 2008).

### Localised anti-doping: testing’s new frontier?

The prevalence of doping with amateur ranks and competitions may be an unknown quantity but there has been sufficient anecdotal evidence to prompt grassroots organisations to develop their own anti-doping programmes (Burns, 2014). Partly, the basis for this is the failure of USADA to provide sufficient levels of testing to deter doping. However, USA Cycling has committed funding of \$270,000 to cover professional and amateur events. The latter is on the condition that local cycling associations can match fund the costs involved, for which the full costs are \$3500 for a single day event and \$7000 for two days. By January 2014, 16 local organisations, comprising 70% of USA Cycling’s membership had joined the programme (Burns, 2014). By so doing, the responsibility for initiating, planning and raising funds lies with amateur cyclists whose desire is to protect their specific local sports environment from doping. Working in collaboration with USA Cycling to apply the WADA rules creates this perhaps unique situation in which non-experts are collectively imposing the rules designed for professionals upon themselves and their compatriots. This represents an interesting innovation, that builds upon notions of discipline and (self) surveillance that are integral to anti-doping (Henning, 2013), but where the power to decide who is observed and disciplined lies with a small group of well-organised cyclists who aim to promulgate the ideologies and practices of systematic anti-doping policy. These developments may be unique, we do not know of other similar initiatives, and may be a precursor of other forms of grassroots anti-doping. It raises questions about decision-making, transparency and trust, when those leading the anti-doping groups are potentially open to bias in the course of targeting specific races and riders. Moreover, given some of the problematic cases outlined above, how would local organisational anti-doping movements be sustainable if they were largely “catching” inadvertent dopers, older riders using prescription anti-ageing drugs, and recreational drug users?

### Conclusions

The commonly accepted assumption about and reasons for doping by professionals do not necessarily hold true at the lower levels of cycling. At these lower levels questions of intent, knowledge, accident and lifestyle become central to understanding banned substance use. Taken as a whole, these cases call into question the basic tenets of health promotion, fair play and spirit of sport underpinning anti-doping. A broader and in-depth investigation into doping cases in cycling reveals that current anti-doping policies can have severe implications for non-professional cyclists. Though the patterns of actual use are unclear, there are indications that banned substances function as different practices at different levels of the sport.

Current anti-doping test and ban efforts have had some success detecting a number of cyclists using banned substances for performance enhancement, as evidenced by the 2012 decision and sanctions against members of the US



Postal Service team. However, the relatively few anti-doping victories have done little to prevent a doping culture from taking root in US cycling. Professional cyclists competing on the European circuit likely had to choose between acquiescing to new performance demands by taking banned substances or to race at a disadvantage against their doping counterparts. During the same period anti-doping efforts were unable to stymie the spread of doping at the elite level and doping culture spread to lower levels of the sport. This “culture of risk” around doping (Bette, 2004) was normalised in this environment as a way to be competitive. Instead of being viewed as a deviant practice doping might be viewed as a way to fit into cycling culture and demonstrate one’s competitive status. Thus, by the early 2000s testing results and discoveries of distribution networks like the “Papp List” reveal that doping was occurring at all levels of cycling, though the focus remained on the elite cases where intentional doping was likely.

This analysis has shown that while some aspirational non-professionals did use PEDs with the intention of cheating, many infractions by non-professional cyclists are likely the result of recreational drug use not intended to aid performance, supplements containing banned substances, or doctor prescribed medications or anti-ageing products. Anti-doping regulations have not made allowances for these substances despite the trends of decriminalisation and even legalisation of cannabis, expanding markets for supplement and anti-ageing products, and the increasing social acceptability of each within wider society. The strict liability principle leaves little room for explaining innocuous or incidental use of banned substances, as presence immediately equals guilt regardless of intent. However, the time and financial costs of appealing a ruling may act as a disincentive to challenging a positive test for many amateurs. The low number of appeals by non-professionals has resulted in a situation where professional riders engaged in intentional, systematic doping serve lighter bans than their amateur counterparts. As such, the unintentional or recreational use of a banned substance can result in a relatively innocent cyclist becoming an incidental casualty in the war on doping, a situation that seemingly runs afoul of the notions of fairness and spirit of sport that anti-doping policies are meant to foster.

These problems are further compounded by the problematic TUE system under which athletes may be denied a waiver to use a medically prescribed banned substance while actively competing. In glaring contradiction to the principle of health promotion, some athletes seeking to comply with anti-doping regulations are effectively told to decide between taking a substance that may be medically necessary or stop competing. It is perhaps unsurprising that riders may forgo the process altogether, taking their chances at being asked to submit for a test.

One innovative outcome has been the emergence of localised anti-doping, which aims to focus on reducing cheating through use of performance-enhancing drugs. However, if the established expertise of (inter)national anti-doping agencies cannot address the extent of doping but creates innocent victims in pursuit of that failed ambition, what hope is there for community groups forced to follow WADA guidelines? There is perhaps an opportunity for

implementing standards different from those aimed at professionals and that take local lifestyles and the variety of drug use into account. If such a model for volunteer anti-doping could be established, almost like a “2nd tier” doping control, then groups in other sports and other countries may help forge a closer link between anti-doping idealism and athlete behaviour. Rather than relying on the national-level USADA and NACAS to decide exemptions and hear appeals, localised anti-doping groups could take governance in their own hands. Local groups could set up low or no-cost arbitration programs to allow athletes to appeal or explain specific situations, such as Amber Neben’s tainted supplement case or Jeff Hammond’s therapeutic testosterone use. Carrying out these functions themselves, in tandem with localised testing, these grassroots anti-doping groups may allow them to correct some of the injustices that result from the current centralised anti-doping system. Thus behind the headlines of US Postal and Lance Armstrong may lie a form of anti-doping with the potential for changing policy and engaging all athletes in a realistic approach to “clean sport”.

### Declaration of interest

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### References

- Albert, L. (2003, December 19). Houseman tests positive and gets suspended. *PinkBike*. Retrieved from <http://www.pinkbike.com/news/article1816.html>.
- Amos, A. (2007). Inadvertent doping and the WADA code. *Bond Law Review*, 19, 1–25. Retrieved from <http://epublications.bond.edu.au/blr/vol19/iss1/1>.
- Backhouse, S.H., & McKenna, J. (2012). Reviewing coaches’ knowledge, attitudes and beliefs regarding doping in sport. *International Journal of Sports Science and Coaching*, 7, 167–176.
- Backhouse, S., McKenna, J., Robinson, S., & Atkin, A. (2007). *International literature review: Attitudes, behaviours, knowledge and education – Drugs in sport: Past, present and future*. Report to the World Anti-Doping Agency (WADA).
- Beamish, R., & Ritchie, I. (2004). From chivalrous ‘brothers-in-arms’ to the eligible athlete changed principles and the IOC’s banned substance list. *International Review for the Sociology of Sport*, 39, 355–371.
- Beaudin, M. (2013, October 21). Is it medicine or dope? A cat. 4 vs. the USADA. *Velo News*. Retrieved from [http://velonews.competitor.com/2013/10/news/is-this-man-a-doper\\_306150](http://velonews.competitor.com/2013/10/news/is-this-man-a-doper_306150).
- Bette, K.H. (2004). Biographical risks and doping. In Hoberman, J., & Møller, V. (Eds.), *Doping and public policy* (pp. 101–111). Odense: University Press of Southern Denmark.
- Bilard, J., Ninot, G., & Hauw, D. (2011). Motives for illicit use of doping substances among athletes calling a national antidoping phone-help service: An exploratory study. *Substance Use & Misuse*, 46, 359–367.
- Bloodworth, A., & McNamee, M. (2010). Clean Olympians? Doping and anti-doping: The views of talented young British athletes. *International Journal of Drug Policy*, 21, 276–282.
- Brewer, B.D. (2002). Commercialization in professional cycling 1950–2001: Institutional transformations and the rationalization of “doping”. *Sociology of Sport Journal*, 19, 276–301.
- Burns, T. (2014, January 24). 16 Local groups join USA cycling’s race clean program. *Cyclingnews*. Retrieved from <http://www.cyclingnews.com/news/16-local-groups-join-usa-cyclings-raceclean-program>.
- CBS Sports (2007, September 20). Canadian cyclist Jeanson admits to doping. *CBC*. Retrieved from <http://www.cbc.ca/sports/canadian-cyclist-jeanson-admits-to-doping-1.675372>.
- Christiansen, A.V. (2005). The legacy of Festina: Patterns of drug use in European cycling since 1998. *Sport in History*, 25, 497–514.

- Christiansen, A.V. (2010). 'We are not sportsmen, we are professionals': Professionalism, doping and deviance in elite sport. *International Journal of Sport Management and Marketing*, 7, 91–103.
- Cohen, P.A. (2009). American roulette—Contaminated dietary supplements. *New England Journal of Medicine*, 361, 1523–1525.
- Cohen, P.A., Travis, J.C., & Venhuis, B.J. (2013). A methamphetamine analog (*N*, $\alpha$ -diethyl-phenylethylamine) identified in a mainstream dietary supplement. *Drug Testing and Analysis*. doi:10.1002/dta.1578.
- Cox, T.W. (2014). International war against doping: Limiting the collateral damage from strict liability. *The Vanderbilt Journal of Transnational Law*, 47, 295.
- Denham, B.E. (2011). When science, politics, and policy collide: On the regulation of anabolic-androgenic steroids, steroid precursors, and 'dietary supplements' in the United States. *Journal of Sport & Social Issues*, 35, 3–21.
- Dimeo, P. (2007). *A history of drug use in sport, 1876–1976: Beyond good and evil*. London and New York: Routledge.
- Dreier, F. (2012, July 27). Wider testing reveals doping among amateur cyclists, too. *New York Times*. Retrieved from [http://www.nytimes.com/2012/07/28/sports/cycling/doping-in-cycling-reaches-into-amateur-ranks.html?\\_r=0](http://www.nytimes.com/2012/07/28/sports/cycling/doping-in-cycling-reaches-into-amateur-ranks.html?_r=0).
- Fitch, K.D. (2013). Therapeutic use exemptions (TUEs) at the Olympic Games 1992–2012. *British Journal of Sports Medicine*, 47, 815–818.
- Ford, B. (2011, October 23). Joe Papp's long and winding road: Lower-tier pro's career, PED role touched some of cycling's biggest names. *ESPN*. Retrieved from [http://espn.go.com/espn/otl/story/\\_/id/7132452/former-cyclist-joe-papp-gets-three-years-probation-ped-case](http://espn.go.com/espn/otl/story/_/id/7132452/former-cyclist-joe-papp-gets-three-years-probation-ped-case).
- Gleaves, J. (2010). No harm, no foul? Justifying bans on safe performance-enhancing drugs. *Sport, Ethics and Philosophy*, 4, 269–283.
- Gleaves, J., Llewellyn, M., & Lehrbach, T. (2014). Before the rules were written: Navigating moral ambiguity in performance enhancement. *Sport, Ethics and Philosophy*, 8, 85–99.
- Hamilton, T., & Coyle, D. (2012). *The secret race: Inside the hidden world of the Tour de France: Doping, cover-ups and winning at all costs*. London: Bantam.
- Hanstad, D.V., & Waddington, I. (2009). Sport, health and drugs: A critical re-examination of some key issues and problems. *Perspectives in Public Health*, 129, 174–182.
- Henne, K., Koh, B., & McDermott, V. (2013). Coherence of drug policy in sports: Illicit inclusions and illegal inconsistencies. *Performance Enhancement & Health*, 2, 48–55.
- Henning, A.D. (2013). (Self-)surveillance, anti-doping, and health in non-elite road running. *Surveillance & Society*, 11, 494–507.
- Hoberman, J. (2003). 'A pharmacy on wheels': Doping and community cohesion among professional cyclists following the Tour de France Scandal of 1998. In V. Møller, & J. Nauright (Eds.), *The essence of sport* (pp. 107–128). Odense: University of Southern Denmark Press.
- Hoberman, J. (2005). *Testosterone dreams: Rejuvenation, aphrodisia, doping*. Berkeley: University of California Press.
- Hoff, D. (2012). Doping, risk and abuse: An interview study of elite athletes with a history of steroid use. *Performance Enhancement & Health*, 1, 61–65.
- Huestis, M.A., Mazzoni, I., & Rabin, O. (2011). Cannabis in sport. *Sports Medicine*, 41, 949–966.
- Hunt, T.M., Dimeo, P., & Jedlicka, S.R. (2012). The historical roots of today's problems: A critical appraisal of the international anti-doping movement. *Performance Enhancement & Health*, 1, 55–60.
- Kamber, M. (2011). Development of the role of National Anti-Doping Organisations in the fight against doping: From past to future. *Forensic Science International*, 213, 3–9.
- Kayser, B., & Broers, B. (2012). The Olympics and harm reduction. *Harm Reduction Journal*, 9, 1–9.
- Kayser, B., Mauron, A., & Miah, A. (2007). Current anti-doping policy: A critical appraisal. *BMC Medical Ethics*, 8, 2. doi:10.1186/1472-6939-8-2.
- Knapp, G. (2004, July 29). Bergman sacked by Jelly Belly, may lose NRC points. *Cycling News*. Retrieved from [http://autobus.cyclingnews.com/features/?id=2004/bergman\\_suspended](http://autobus.cyclingnews.com/features/?id=2004/bergman_suspended).
- Lamont-Mills, A., & Christensen, S. (2008). 'I have never taken performance enhancing drugs and I never will': Drug discourse in the Shane Warne case. *Scandinavian Journal of Medicine & Science in Sports*, 18, 250–258.
- Laure, P., & Reinsberger, H. (1995). Doping and high-level endurance walkers. Knowledge and representation of a prohibited practice. *The Journal of Sports Medicine and Physical Fitness*, 35, 228–231.
- Laurendeau, J., & Moroz, S. (2012). Morality in the mountains: Risk, responsibility, and neoliberalism in newspaper accounts of backcountry rescue. *Communication & Sport*, 1, 382–399.
- Lentillon-Kaestner, V.V., & Carstairs, C.C. (2010). Doping use among young elite cyclists: A qualitative psychosociological approach. *Scandinavian Journal of Medicine & Science in Sports*, 20, 336–345.
- Lentillon-Kaestner, V.V., Hagger, M.S., & Hardcastle, S.S. (2012). Health and doping in elite-level cycling. *Scandinavian Journal of Medicine & Science in Sports*, 22, 596–606.
- Lopez, B. (2011). The invention of a 'drug of mass destruction': Deconstructing the EPO myth. *Sport in History*, 31, 84–109.
- Lovett, I. (2012, October 17). 'Tattooed guy' was pivotal in Armstrong case. *New York Times*. Retrieved from [http://www.nytimes.com/2012/10/18/sports/cycling/inquiry-into-kayle-leogrande-led-to-lance-armstrongs-eventual-fall.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2012/10/18/sports/cycling/inquiry-into-kayle-leogrande-led-to-lance-armstrongs-eventual-fall.html?pagewanted=all&_r=0).
- Lundby, C., Achman-Andersen, N.J., Thomsen, J.J., Norgaard, A.M., & Robach, P. (2008). Testing for recombinant human erythropoietin in urine: Problems associated with current anti-doping testing. *Journal of Applied Physiology*, 105, 417–419.
- Macur, J. (2004). Seeking her way out of infamy. *New York Times*. Retrieved from <http://www.nytimes.com/2004/08/10/sports/olympics-seeking-her-way-out-of-infamy.html>.
- Martin, D.M., Baron, D.A., & Gold, M.S. (2006). A review of performance-enhancing drugs in professional sports and their spread to amateur athletics, adolescents, and other at-risk populations. *Journal of Addictive Diseases*, 25, 5–15.
- Mazanov, J., Huybers, T., & Connor, J. (2011). Qualitative evidence of a primary intervention point for elite athlete doping. *Journal of Science and Medicine in Sport*, 14, 106–110.
- McDonald, M.G., & Birrell, S. (1999). Reading sport critically: A methodology for interrogating power. *Sociology of Sport Journal*, 16, 283–300.
- Miceli, A. (2013, May 15). Tour mum as WADA softens stance on marijuana. *Golfweek*.
- Mignon, P. (2003). The Tour de France and the doping issue. *The International Journal of the History of Sport*, 20, 227–245.
- Møller, V. (2006). Knud Enemark Jensen's death during the 1960 Rome Olympics: A search for truth? *Sport in History*, 25, 452–471.
- Møller, V. (2014). Who guards the guardians. *The International Journal of the History of Sport*, 31, 934–950.
- Morente-Sánchez, J., & Zabala, M. (2013). Doping in sport: A review of elite athletes' attitudes, beliefs, and knowledge. *Sports Medicine*, 43, 395–411.
- North American Court of Arbitration (NACAS). (2003). Decision. Retrieved from <http://www.usada.org/testing/results/arbitration-decisions/>.
- Ntoumanis, N., Ng, J.Y.Y., Barkoukis, V., & Backhouse, S.H. (2013). *A statistical synthesis of the literature on personal and situational variables that predict doping in physical activity settings*. Technical report. Montreal: World Anti-Doping Agency.
- Ntoumanis, N., Ng, J.Y.Y., Barkoukis, V., & Backhouse, S.H. (2014). Personal and psychosocial predictors of doping use in physical activity settings: A meta-analysis. *Sports Medicine*, 44, 1603–1624.
- Ohl, F., Fincoeur, B., Lentillon-Kaestner, V., Defrance, J., & Brissonneau, C. (2013). The socialization of young cyclists and the culture of doping. *International Review for the Sociology of Sport*, 1–18.
- Outram, S.M., & Stewart, B. (2015). Condemning and condoning: Elite amateur cyclists' perspectives on drug use and professional cycling. *International Journal of Drug Policy*. [Epub ahead of print].
- Overbye, M., Knudsen, M.L., & Pfister, G. (2013). To dope or not to dope: Elite athletes' perceptions of doping deterrents and incentives. *Performance Enhancement & Health*, 2, 119–134.
- Overbye, M., & Wagner, U. (2013). Between medical treatment and performance enhancement: An investigation of how elite athletes experience therapeutic use exemptions. *International Journal of Drug Policy*, 24, 579–588.
- Petróczi, A., & Aidman, E. (2009). Measuring explicit attitude toward doping: Review of the psychometric properties of the Performance Enhancement Attitude Scale. *Psychology of Sport and Exercise*, 10, 390–396.

- Pitsch, W., Emrich, E., & Klein, M. (2007). Doping in elite sports in Germany: Results of a www survey. *European Journal for Sport and Society*, 4, 89–102.
- Pluim, B. (2008). A doping sinner is not always a cheat. *British Journal of Sports Medicine*, 42, 549–550.
- Ramachandra, K., Narendranat, S., Somashekar, H.S., Patil, N.A., Reshma, S.R., & Veena, A. (2012). Drug abuse in sports. *Journal of Pharmacy Research*, 5, 593–603.
- Rogers, N. (2010, November 25). Chuck Coyle blames doping suspension on former teammates. *VeloNews*. Retrieved from [http://velonews.competitor.com/2010/11/news/chuck-coyle-blames-doping-suspension-on-former-teamsmates\\_150931](http://velonews.competitor.com/2010/11/news/chuck-coyle-blames-doping-suspension-on-former-teamsmates_150931).
- Rogers, N. (2012, May 1). USADA: O'Neill a key player in O'Bee doping case. *VeloNews*. Retrieved from [http://velonews.competitor.com/2010/10/news/usada-o%E2%80%99neill-a-key-player-in-obe-doping-case\\_145215](http://velonews.competitor.com/2010/10/news/usada-o%E2%80%99neill-a-key-player-in-obe-doping-case_145215).
- Sas-Nowosielski, K., & Swiatkowska, L. (2008). Goal orientations and attitudes toward doping. *International Journal of Sports Medicine*, 29, 607–612.
- Sefiha, O. (2012). Bike racing, neutralization, and the social construction of performance-enhancing drug use. *Contemporary Drug Problems*, 39, 213–245.
- Simon, R. (2004). *Fair play: Sports, value and society*. 2nd ed. Boulder, CO: Westview Press.
- Sjöqvist, F., Garle, M., & Rane, A. (2008). Use of doping agents, particularly anabolic steroids, in sports and society. *The Lancet*, 371, 1872–1882.
- Smith, A.C., Stewart, B., Oliver-Bennetts, S., McDonald, S., Ingerson, L., Anderson, A. ... Graetz, F. (2010). Contextual influences and athlete attitudes to drugs in sport. *Sport Management Review*, 13, 181–197.
- Stewart, B., & Smith, A.C. (2008). Drug use in sport implications for public policy. *Journal of Sport & Social Issues*, 32, 278–298.
- Stokes, S. (2010, November 24). US Masters rider Neal Schubel suspended after EPO purchase and use. *Velonation*. Retrieved from <http://www.velonation.com/News/ID/6478/US-Masters-rider-Neal-Schubel-suspended-after-EPO-purchase-and-use.aspx>.
- Straubel, M. (2008). International convention against doping in sport: Is it the missing link to USADA being a state actor and WADC coverages of US Pro athletes. *Marquette Sports Law Review*, 19, 63–89.
- Strelan, P., & Boeckmann, R.J. (2006). Why drug testing in elite sport does not work: Perceptual deterrence theory and the role of personal moral beliefs. *Journal of Applied Social Psychology* 36, 2909–2934.
- Tilin, A. (2011). *The doper next door: My strange and scandalous year on performance enhancing drugs*. Berkeley, CA: Counterpoint.
- Tsorbatzoudis, H., Rodafinos, A., Spiliopoulou, H., Barkoukis, V., & Lazuras, L. (2009). Determinants of doping intentions in sport. WADA final report. Salonika: Aristotle University of Thessaloniki.
- USA Cycling (2004, March 25). *USADA announces results of Sbeih hearing*. Retrieved from <http://www.usacycling.org/usada-announces-results-of-sbeih-hearing.htm>.
- USA Cycling (2006, February 16). *USADA sanctions Uruguayan rider*. Retrieved from <http://www.usacycling.org/usada-sanctions-urugua-yan-rider.htm>.
- USA Cycling (2010, September 9). *Cycling athlete receives life-time ban for 2nd doping violation*. Retrieved from <http://www.usacycling.org/cycling-athlete-receives-life-time-ban-for-2nd-doping-violation.htm>.
- USA Cycling (2014, May 8). *Masters cyclist, Robertson, accepts sanction for anti-doping violation*. Retrieved from <http://www.usacycling.org/masters-cyclist-robertson-accepts-sanction-for-anti-doping-violation.htm>.
- USADA (2003, September 29). *U.S. cyclist Krause accepts provisional suspension from U.S. anti-doping agency for positive drug test*. Retrieved from <http://www.usada.org/u-s-cyclist-krause-accepts-provisional-suspension-from-u-s-anti-doping-agency-for-positive-drug-test/>.
- USADA (2012, August 24). *Reasoned decision of the United States anti-doping agency on disqualification and ineligibility*. Retrieved from <http://cyclinginvestigation.usada.org/>.
- Vetteniemi, E. (2010). Runners, rumors, and reams of representations. *Journal of Sport History*, 37, 415–430.
- WADA. (2013, May 13). *WADA executive committee and foundation board approach final revision of 2015 code*. Retrieved from <https://www.wada-ama.org/en/media/news/2013-05/wada-executive-committee-and-foundation-board-approach-final-revision-of-2015>.
- Waddington, I. (2000). *Sport, health and drugs: A critical sociological perspective*. London: Spon.
- Weislo, L. (2009, November 10). Williams admits to doping positive. *Cyclingnews*. Retrieved from <http://www.cyclingnews.com/news/williams-admits-to-doping-positive>.
- Wiesing, U. (2011). Should performance-enhancing drugs in sport be legalized under medical supervision? *Sports Medicine*, 41, 167–176.
- World Anti-Doping Agency (WADA). (2009). *World Anti-Doping Code*. World Anti-Doping Agency. Retrieved from <http://www.wadaama.org/en/World-Anti-Doping-Program/Sports-and-Anti-Doping-Organizations/The-Code/>.
- Yonamine, M., Garcia, P.R., & de Moraes Moreau, R.L. (2004). Non-intentional doping in sports. *Sports Medicine*, 34, 697–704.